This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Princeton University Library
32101 063850885

6517
.833
v.5

Library of

VETTESTEN NOVTAHTVM

Dei Sub Numine Viget

Princeton University.

6517
.833
v.5

Library of

VET TES EN NOV TAM TVM

Dei Sub Numine Viget

Princeton University.

PRINCETON UNIVERSITY
MAY 3 1921
LIBRARY

The American Journal of School Hygiene

A quarterly publication devoted to the interests of educational hygiene
in the public schools of the United States

VOL. V MARCH, 1921 No. 1

LAWRENCE AUGUSTUS AVERILL, *Editor*
Head of the Department of School Hygiene and Educational Psychology in the Massachusetts State Normal School at Worcester, Massachusetts

Contributing Editors

WILLIAM H. BURNHAM
Professor of Pedagogy and School Hygiene, Clark University

FLETCHER B. DRESSLAR
Professor of Health Education
George Peabody College for Teachers

LEWIS M. TERMAN
Professor of Education
Leland Stanford Junior University

LOUIS W. RAPEER
President, National Research University, Washington, D. C.

C. WARD CRAMPTON
Director of Physical Training for the Department of Education of the City of New York

CONTENTS

PAGE

Reconstruction in Child Welfare
ELIZABETH McCRACKEN 1

Publications Received 15

The American Journal of School Hygiene
WORCESTER, MASSACHUSETTS

Published quarterly, in March, June, September and December. Office of Publication, Worcester, Massachusetts.
Terms: $2.00 per annum, strictly in advance; single numbers, 50 cents.
Foreign: Canada $2.10; England, France and Italy, $2.25.

The American Journal of School Hygiene

VOL. V MARCH, 1921 No. 1

PUBLISHED QUARTERLY, IN MARCH, JUNE, SEPTEMBER AND DECEMBER

Edited by Lawrence Augustus Averill

with the assistance of the following contributing editors:
Professor William H. Burnham, Clark University
Professor Fletcher B. Dresslar, George Peabody College for Teachers
Professor Lewis M. Terman, Leland Stanford Junior University
Dr. Louis W. Rapeer, President, National Research University, Washington, D. C.
Dr. C. Ward Crampton, Department of Education, New York City

RECONSTRUCTION IN CHILD WELFARE

By ELIZABETH MCCRACKEN

Children's Bureau, U. S. Department of Labor

Long before the outbreak of the war, more than one nation had recognized the fact that reconstruction in child welfare was needed, and had tried to bring it to pass within its own borders. And there have been signal examples, not only of municipal and state, but of national cooperation. For example, city agencies for the care of sick babies have cooperated with other city agencies for the care of pregnant women (in Boston, Mass., for example), appreciating the intimate relation between the health of the expectant mother and the health of her young infant. State organizations providing for the treatment of delinquent children have aided in efforts to secure mothers' pensions, realizing to how great an extent good behavior in children is contingent upon the presence of the mother in the home. And, even under the system of States' Rights, there have been in the United States significant instances of cooperation between the states, notably in the White Slave Act, which is essentially a measure for the protection of adolescent girls. Indeed, cooperation within the confines of a nation is gradually becoming a matter of course; even when there is no actual legislation providing for it, increasingly it occurs in the form of adoption by one community or state of methods or procedures demonstrated

(RECAP)

489204

as good in another. For instance, many a county has provided for a county public health nurse, owing to the excellent results obtained by such a nurse in some other county; the state board of health of one state is apt to study and either to follow or to adapt to its own need any feature of the program of another state board of health which has shown itself to be valuable.

But the war has taught the nations to go beyond their own confines. The note of the new era is not only cooperation and not only national cooperation, but international cooperation. This is, of course, only another term for internationalism. And there is no department of life in which internationalism can be so immediately and so permanently valuable as in child welfare. The attention of the world is peculiarly concentrated at the present time upon the interests of children. These interests, always paramount, never appear quite so immediate as at the end of a war—any war—and this has been a world war. It may perhaps be considered not only appropriate but almost inevitable that those nations which were allies in the war should now join together in formulating standards and making plans for the rearing of their children.

For, in order to be effectual, efforts toward reconstruction in child welfare must be based upon authoritative standards and be made according to a practicable plan; otherwise there is likely to be confusion and waste. By authoritative standards are understood those formulated by experts in the several fields of child welfare,—not by one expert for each field, moreover, but by a group for each field, in agreement as to what constitutes essentials in that particular field. A set of standards thus formulated, while not overweighted by the "specialty" of any one expert, yet contains the specialties of the several groups, in coordination. Similarly with plans. These, in order to be characterized by what has been termed "feasibility of performance," must be made, not by one person, however able, but by a group of persons equally but variously able. In short, reconstruction in child welfare requires cooperation of the very highest and most finished kind.

In addition to its current work, the Children's Bureau of the U. S. Department of Labor, during the fiscal year 1918-1919, carried on as its chief activity the work now familiarly known to practically every section of the country as the Children's Year Campaign. The work was done jointly with the Child Conservation Section of the Field Division of the Council of National Defense. At the close of Children's Year, on April 6, 1919, all but two states were participating in Children's Year, and one of these had dissolved its State Division of the Women's Committee while the other was carrying on a child welfare program formulated before the war. Alaska, Hawaii, Porto Rico, and the Philippine Islands joined with the states and did child welfare work of some kind. Many types of organizations and many types of individuals made up the personnel of the workers for Children's Year; not only recognized experts, but 11,000,000 women, an enormous number of men, and a considerable number of young girls and boys, directed by experts, took part in the work; in every sense Children's Year was national.

But the concluding activity of Children's Year was international. In May, 1919, under the auspices of the Children's Bureau, there was an International Conference on Standards. To that Conference, at the invitation of the Secretary of Labor, the following guests from abroad came:

Sir Arthur Newsholme, late principal medical officer of the Local Government Board, England.

Mrs. Eleanor Barton, of the Women's Cooperative Guild, Eng., an organization of the wives of British wage earners.

Mr. Roland C. Davison, director of the juvenile labor exchanges of England.

Sir Cyril Jackson, board of education, England.

Dr. Clothilde Mulon, war department, France, who has done special work in the supervision of industrial creches during the war.

Dr. René Sand, professor of social and industrial medicine at the University of Brussels, and adviser on medical inspection of the ministry of labor.

Miss E. Carter, principal of high school C., Brussels.

Mr. Isadore Maus, director of the division of child protection, ministry of justice, Belgium.

Dr. Radmila Milochhevitch Lazarevitch, from Serbia, a physician and leader in social service activities.

Dr. Fabio Frassetto, professor of anthropology at the University of Bologna, Italy.

The Conference consisted of an initial conference in Washington, D. C., and eight other regional conferences, held respectively in New York, Cleveland, Boston, Chicago, Denver, Minneapolis, San Francisco, and Seattle.

Standards for the health, education, and work of normal children and for the protection of children in need of special care, with special reference to conditions in the United States, were formulated and adopted at the Washington conference. These standards were considered by certain of the regional conferences and by many specially qualified individuals and, in their last revision, are herewith given:

MINIMUM STANDARDS FOR PUBLIC PROTECTION OF THE HEALTH OF MOTHERS AND CHILDREN.

MATERNITY.

1. Maternity or prenatal centers, sufficient to provide for all cases not receiving prenatal supervision from private physicians. The work of such a center should include—

(a) Complete physical examination by physician as early in pregnancy as possible, including pelvic measurements, examination of heart, lungs, abdomen and urine, and the taking of blood pressure; internal examination before seventh month in primipara; examination of urine every four weeks during early months, at least every two weeks after sixth month, and more frequently if indicated; Wassermann test, whenever possible, especially when indicated by symptoms.

(b) Instruction in hygiene of maternity and supervision throughout pregnancy, through at least monthly visits to a maternity center until end of sixth month, and every two weeks thereafter. Literature to be given mother to acquaint her with the principles of infant hygiene.

(c) Employment of sufficient number of public health nurses to do home visiting and to give instructions to expectant mothers in hygiene of pregnancy and early infancy; to make visits and to care for patient in puerperium; and to see that every infant is referred to child health center.

(d) Confinement at home by a physician or a properly trained and qualified attendant, or in a hospital.

(e) Nursing service at home at the time of confinement and during the lying-in period, or hospital care.

(f) Daily visits for five days, and at least two other visits during second week by physician or nurse from maternity center.

(g) At least ten days' rest in bed after a normal delivery, with sufficient household service for four to six weeks to allow mother to recuperate.

(h) Examination by physician six weeks after delivery before discharging patient. Where these centers have not yet been established, or where their immediate establishment is impracticable, as many as possible of the provisions here enumerated should be carried out by the community nurse, under the direction of the health officer or local physician.

2. Clinics, such as dental clinics and venereal clinics, for needed treatment during pregnancy.
3. Maternity hospitals, or maternity wards in general hospitals, sufficient to provide care in all complicated cases and for all women wishing hospital care; free or part-payment obstetrical care to be provided in every necessitous case at home or in a hospital.
4. All midwives to be required by law to show adequate training, and to be licensed and supervised.
5. Adequate income to allow the mother to remain in the home through the nursing period.
6. Education of general public as to problems presented by maternal and infant mortality and their solution.

INFANTS AND PRESCHOOL CHILDREN.

1. Complete birth registration by adequate legislation requiring reporting within three days after birth.
2. Prevention of infantile blindness by making and enforcing adequate laws for treatment of eyes of every infant at birth and supervision of all positive cases.
3. Sufficient number of children's health centers to give health instruction under medical supervision for all infants and children not under care of private physician, and to give instruction in breast feeding and in care and feeding of children to mothers, at least once a month throughout first year, and at regular intervals throughout preschool age. This center to include a nutrition and dental clinic.
4. Children's health center to provide or to cooperate with sufficient number of public health nurses to make home visits to all infants and children of preschool age needing care—one public health nurse for average general population of 2,000.

Visits to the home are for the purpose of instructing the mother in

(a) Value of breast feeding.

(b) Technic of nursing.

(c) Technic of bath, sleep, clothing, ventilation and general care of the baby, with demonstrations.

(d) Preparation and technic of artificial feeding.

(e) Dietary essentials and selection of food for the infant and for older children.

(f) Prevention of disease in children.

5. Dental clinics; eye, ear, nose and throat clinics; venereal and other clinics for the treatment of defects and disease.

6. Children's hospitals, or beds in general hospitals, or provision for medical and nursing care at home, sufficient to care for all sick infants and young children.

7. State licensing and supervision of all child-caring institutions or homes in which infants or young children are cared for.

8. General educational work in prevention of communicable disease and in hygiene and feeding of infants and young children.

SCHOOL CHILDREN.

1. Proper location, construction, hygiene, ventilation and sanitation of schoolhouse; adequate room space—no overcrowding.

2. Adequate playground and recreational facilities, physical training and supervised recreation.

3. Adequate space and equipment for school medical work and available laboratory service.

4. Full-time school nurse to give instruction in personal hygiene and diet, to make home visits to advise and instruct mothers in principles of hygiene, nutrition and selection of family diet, and to take children to clinics with permission of parents.

5. Part-time physician with one full-time nurse for not more than 2,000 children; if physician is not available, one school nurse for every 1,000 children or full-time physician with two full-time nurses for 4,000 children for—

(a) Complete standardized basic physical examinations once a year, with determination of weight and height at beginning and end of each school year; monthly weighing wherever possible.

(b) Continuous health record for each child to be kept on file with other records of the pupil. This should be a continuation of the pre-school health record which should accompany the child to school.

(c) Special examinations to be made of children referred by teacher or nurse.

(d) Supervision to control communicable disease.

(e) Recommendation of treatment for all remediable defects, diseases, deformities, and cases of malnutrition.

(f) Follow-up work by nurse to see that physician's recommendations are carried out.

6. Available clinics for dentistry, nose, throat, eye, skin, and orthopedic work; and for free vaccination against smallpox.

7. Open-air classes with rest periods and supplementary feedings for pre-tuberculars and certain tuberculous children, and children with grave malnutrition. Special classes for children needing some form of special instruction due to physical or mental defect.

8. Nutrition classes for physically subnormal children, and the maintenance of midmorning lunch or hot noonday meal when necessary.

9. Examination by psychiatrist of all atypical or retarded children.

10. Education of school child in health habits, including hygiene and care of young children.

11. General educational work in health and hygiene, including education of parent and teacher, to secure full cooperation in health program.

ADOLESCENT CHILDREN.

1. Complete standardized basic physical examination by physician, including weight and height, at least once a year, and recommendation for necessary treatment to be given at children's health center, school, or other available agency.

2. Clinics for treatment of defect and disease.

3. Supervision and instruction to insure—

(a) Ample diet, with special attention to growth-producing foods.

(b) Sufficient sleep and rest and fresh air.

(c) Adequate and suitable clothing.

(d) Proper exercise for physical development.

(e) Knowledge of sex hygiene and reproduction.

4. Full time education compulsory to at least 16 years of age, adapted to meet the needs and interest of the adolescent mind, with vocational guidance and training.

5. Clean, ample recreational opportunities to meet social needs, with supervision of commercial amusements.

6. Legal protection from exploitation, vice, drug habits, etc.

MINIMUM STANDARDS FOR CHILDREN ENTERING EMPLOYMENT.

An age minimum of 16 for employment in any occupation, except that children between 14 and 16 may be employed in agriculture and domestic service during vacation periods until schools are continuous throughout the year.

An age minimum of 18 for employment in and about mines and quarries.

An age minimum of 21 for girls employed as messengers for telegraph and messenger companies.

An age limit of 21 for employment in the special delivery service of the United States Post Office Department.

Prohibition of the employment of minors in dangerous, unhealthy, or hazardous occupations, or at any work which will retard their proper physical or moral development. All children between 7 and 16 years of age shall be required to attend school for at least nine months each year. Children between 16 and 18 years of age who have completed the eighth grade but not the high school, and are legally and regularly employed shall be required to attend day continuation schools at least eight hours a week.

Children between 16 and 18 who have not completed the eighth grade or children who have completed the eighth grade and are not regularly employed shall attend full time school. Occupational training especially adapted to their needs shall be provided for those children who are unable because of mental subnormality to profit by ordinary school instruction.

Vacation schools placing special emphasis on healthful play and leisure time activities shall be provided for all children.

A child shall not be allowed to go to work until he has had a physical examination by a public-school physician or other medical officer especially appointed for that purpose by the agency charged with the enforcement of the law, and has been found to be of normal development for a child of his age and physically fit for the work at which he is to be employed.

There shall be annual physical examination of all working children who are under 18 years of age. No minor shall be employed more than 8 hours a day. The maximum working day for children between 16 and 18 years of age shall be shorter than the legal working day for adults. The hours spent at continuation schools by children under 18 years of age shall be counted as part of the working day.

Night work for minors shall be prohibited between 6 p. m. and 7 a. m.

Minors at work shall be paid at the rate of wages which for full time work shall yield not less than the minimum essential for the "necessary cost of proper living," as determined by a minimum wage commission or other similar official board. During a period of learning they may be rated as learners and paid accordingly. The length of the learning period should be fixed by such commission or other similar official board on educational principles only.

Placement and employment supervision.—There shall be a central agency which shall deal with all juvenile employment problems. Adequate provision shall be made for advising children when they leave school of the employment opportunities open to them, for assisting them in finding suitable work, and providing for them such supervision as may be needed during the first few years of their employment. All agencies working towards these ends shall be coordinated through the central agency.

ADMINISTRATION.

Provision shall be made for issuing employment certificates to all children entering employment who are under 18 years of age. An employment certificate shall not be issued to the child until the issuing officer has received, approved, and filed the following:

1. A birth certificate or, if unobtainable, other reliable documentary proof of the child's age.
2. Satisfactory evidence that the child has completed the eighth grade.
3. A certificate of physical fitness signed by a public school physician or other medical officer especially appointed for that purpose by the agency charged with the enforcement of the law. This certificate shall state that the minor has been thoroughly examined by the physician and that he is physically qualified for the employment contemplated.
4. Promise of employment.

The certificate shall be issued to the employer and shall be returned by the employer to the issuing officer when the child leaves his employment. The school last attended, the compulsory education department, and the continuation schools shall be kept informed by the issuing officers of certificates issued or refused and of unemployed children for whom certificates have been issued.

Minors over 18 years of age shall be required to present evidence of age before being permitted to work in occupations in which the entrance age or hours are especially regulated. Record forms shall be standardized and the issuing of employment certificates shall be under State supervision. Reports shall be made to the factory inspection department of all certificates issued and refused. Full-time attendance officers adequately proportioned to the school population shall be provided in cities, towns, and counties to enforce the school attendance law.

The enforcement of school-attendance laws by city, town, or county school authorities shall be under State supervision.

Factory inspection and physical examination of employed minors.—Inspection for the enforcement of all child labor laws, including those regulating the employment of children in mines or quarries, shall be under one and the same department. The number of inspectors shall be sufficient to insure semi-annual inspection of all establishments in which children are employed and such special inspections and investigations as are necessary to insure the protection of the children.

Provision should be made for a staff of physicians adequate to examine annually all employed children under 18 years of age.

MINIMUM STANDARDS RELATING TO CHILDREN IN NEED OF SPECIAL CARE.

The conclusions of the White House Conference of 1909 on the Care of Dependent Children are reaffirmed in all essentials. They have been guides for communities and States in reshaping their plans for children in need of special care. They are commended for consideration to all communities whose standards do not as yet conform to them, so that they may be translated into practice in the various States.

The fundamental rights of childhood are normal home life, opportunities for education, recreation, vocational preparation for life, and moral, spiritual and physical development in harmony with American ideals and the educational and spiritual agencies by which these rights of the child are normally safeguarded.

Upon the State devolves the ultimate responsibility for children who are in need of special care by reason of unfortunate home conditions, physical or mental handicap, or delinquency. Particular legislation is required to insure for such children the nearest possible approach to normal development. Home life, which is, in the words of the conclusions of the White House conference, "the highest and finest product of civilization," cannot be provided except upon the basis of an adequate income for each family.

The policy of assistance to mothers who are competent to care for their own children is now well established. It is generally recognized that the amount provided should be sufficient to enable the mother to maintain her children suitably in her own home, without resorting to such outside employment as will necessitate leaving her children without proper care and oversight; but in many States the allowances are still entirely inadequate to secure this result under present living costs. The amount required can be determined only by careful and competent case study, which must be renewed from time to time to meet changing conditions.

A State board of charities or a similar supervisory body should be responsible for the regular inspection and licensing of every institution, agency, or association, incorporated or otherwise, which receives or cares for mothers with children or children who suffer from physical or mental handicaps, or who are delinquent, dependent or without suitable parental care, and should have authority to revoke such licenses for cause and to prescribe forms of registration and report. This State agency should maintain such supervision and visitation of children in institutions and children placed in family homes as will insure ther proper care, training and protection. The incorporation of private organizations caring for children should be required, and should be subject to the approval of the State board of charities or similar body.

State supervision should be conceived and exercised in harmony with democratic ideals which invite and encourage the service of efficient, altruistic forces of society in the common welfare.

Removal of children from their homes.—Unless unusual conditions exist, the child's welfare is best promoted by keeping him in his own home. No child should be permanently removed from his home unless it is impossible so to reconstruct family conditions or build and supplement family resources as to make the home safe for the child, or so to supervise the child as to make his continuance in the home safe for the community. In case of removal separation should not continue beyond the period of reconstruction.

The aim of all provision for children who must be removed from their own homes should be to secure for each child home life as nearly normal as possible, to safeguard his health, and to insure for him the fundamental rights of childhood. To a much larger degree than at present, family homes may be used to advantage in the care of such children.

Before a child is placed in other than a temporary foster home, adequate consideration should be given to his health, mentality, character, and family history and circumstances. Arrangements should be made for correcting remedial physical defects and disease.

Complete records of the child are necessary to a proper understanding of his heredity and personality and of his development and progress while under the care of the agency.

Particular consideration should be given to children who are difficult to place and who require provision adapted to their peculiar needs.

Careful and wise investigation of foster homes are prerequisite to the placing of children. Adequate standards should be required of the foster families as to character, intelligence, experience, training, ability, income, environment, sympathetic attitude, and their ability to give the child proper moral and spiritual training. A complete record should be kept of each foster home, giving the information on which approval was based. The records should show the agency's contacts with the family from time to time, indicating the care given the child intrusted to it. In this way special abilities in the familes will be developed and conserved for children.

Supervision of children placed in foster homes should include adequate visits by properly qualified and well-trained visitors who should exercise watchfulness over the child's health, education, and moral and spiritual development. Periodic physical examinations should be made. Supervision of children in boarding homes should also involve the careful training of the foster parents in their task. Supervision should not be made a substitute for the responsibilities which properly rest with the foster family.

The transfer of the legal guardianship of a child should not be permitted save with the consent of a properly designated State department or a court of proper jurisdiction.

In all cases involving the legal adoption of children, the court should make a full inquiry into all the facts through its own visitor or through some other unbiased agency, before awarding the child's custody.

Children in institutions.—The stay of children in institutions for dependents should be as brief as possible. The condition of all children in such institutions should be carefully studied at frequent intervals, in order to determine whether they should be restored to their own homes, placed in foster homes, or transferred to institutions better suited to their needs. While they do remain in institutions, their condition should approximate as nearly as possible that of normal family life as to health, recreation, schooling and spiritual, æsthetic, civic and vocational training.

Care of children born out of wedlock.—The child born out of wedlock constitutes a very serious problem, and for this reason special safeguards should be provided.

Save for unusual reasons both parents should be held responsible for the child during its minority, and especially should the responsibility of the father be emphasized.

Care of the child by its mother is highly desirable, particularly during the nursing months.

No parent of a child born out of wedlock should be permitted to surrender the child outside its own family, save with the consent of a properly designated State department or a court of proper jurisdiction.

Each State should make suitable provision of a humane character for establishing paternity and guaranteeing to children born out of wedlock the rights naturally belonging to children born in wedlock.

The fathers of such children should be under the same financial responsibilities and the same legal liabilities toward their children as other fathers. The administration of the courts with reference to such cases should be so regulated as not only to protect the legal rights of the mother and child but also to avoid unnecessary publicity and humiliation.

The treatment of the unmarried mother and her child should include the best medical supervision and be so directed as to afford the widest opportunity for wholesome normal life.

Care of physically defective children.—Special care and educational opportunities for deaf, blind and crippled children should be provided in the public educational system, local or State.

Mental hygiene and care of mentally defective children.—The value of the first seven years of childhood from the point of health, education, and morals and formative habits can not be overestimated. Throughout childhood attention should be given to the mental hygiene of the child—the care of the instincts, the emotions, and general personality, and of environment conditions. Special attention should be given to the need for training teachers and social workers in mental hygiene principles.

Each State should assume the responsibility for thorough study of the school and general population for the purpose of securing data concerning the extent of feeble-mindedness and subnormality.

An adequate provision should be made for such mentally defective children as require institutional care. Special schools or classes with qualified teachers and adequate equipment should be provided by educational authorities for such defective children as may be properly cared for outside of institutions. The State should provide for the supervision and after-care of feeble-minded persons at large, in the community, especially those paroled from institutions. Custodial care in institutions for feeble-minded children should not be resorted to until after due consideration of the possibility of adjustment within the community.

Juvenile courts.—Every locality should have available a court organization providing for separate hearings of children's cases; a special method of detention for children entirely apart from adult offenders; adequate investigation for every case; provision for supervision or probation by trained officers, such officers in girl's cases to be women; and a system for recording and filing social as well as legal information.

In dealing with children the procedure should be under chancery jurisdiction, and juvenile records should not stand as criminal records against the children.

Whenever possible such administrative duties as child placing and relief should not be required of the juvenile court, but should be administered by agencies organized for that purpose.

Thorough case study should invariably be made. Provision for mental and physical examinations should be available.

The juvenile victims of sex offenses are without adequate protection against unnecessary publicity and further corruption in our courts. To safeguard them the jurisdiction of the juvenile court should be extended to deal with adult sex offenders against children, and all safeguards of that court be accorded to their victims; or if these cases are dealt with in other courts, the facts revealed in the juvenile court should be made available, and special precautions should be taken for the protection of the children, as here suggested.

(To be concluded in the June number.)

PUBLICATIONS RECEIVED

A TEXTBOOK OF GYMNASTICS, by K. A. Knudsen, chief Inspector of Gymnastics for Denmark. Translated into English by Miss Ruth Herbert, Assistant Organizer of Physical Training for Cornwall, and H. G. Junker, Principal of the Physical Training Institute, Silkeborg, Denmark. Revised to conform to the official syllabus of England by Frank N. Punchard, Master of Method in the College of Hygiene and Physical Training, Dunfermline, Scotland. London and Philadelphia, J. B. Lippincott Company, 1920. 346 pp. Ill.

Knudsen's "Textbook of Gymnastics" reflects the ideals of the famed Swedish gymnast, P. H. Ling. The Ling system emphasizes harmonious development of the body, i. e., the importance of both beauty and health. In aiming to make the body beautiful we are really necessarily aiming to make it healthy. The characteristics of beauty of physique —the well-poised head, arched chest, free carriage and easy, supple movements—are the very outward signs of health and strength, and from a physiological standpoint ensure that the most important functions of the body—respiration, circulation and digestion—are carried on as smoothly and thoroughly as possible.

It is a mistake, we are told, to think that physical training becomes more satisfactory and attractive according to the number of exercises used. Far too often the short time given in the school curriculum to physical training is largely wasted on exercises of little real value in the achievement of good physique and harmony. The first thing, therefore, required of the teacher is a knowledge of how to evaluate properly the exercises he uses. This entails a second requisite in the capable gymnast: namely, a full knowledge of the physical body, its structure and its functions. To a somewhat full discussion of these two cardinal virtues in a teacher of physical training the book is devoted. The 29 sections into which the text is divided comprise chapters dealing with the history and general aim of physical education; the "table"; progression in gymnastics; the teacher; general points on good teaching form; gymnasium and apparatus; etc. The major portion of the book is devoted to a clear, well-illustrated exposition of the most valuable forms of physical training for the various parts of the body. Among these may be mentioned the following: order exercises for all ages; leg exercises; neck exercises; arm exercises; exercises of span, heaving, balance, marching, running, etc.; lateral, abdominal and dorsal exercises, etc., etc.

The scores of cuts and sketches throughout the book add inestimably to its practical value.

> THE SEX FACTOR IN HUMAN LIFE, a Study Outline for College Men, by Thomas Walton Galloway, Ph. D., Formerly Professor of Zöology, Beloit College. Author of "Textbook of Zöology," "Use of Motives in Moral Education," "Biology of Sex," etc. New York, The American Social Hygiene Association, Inc., 1921. (Publication No. 320.) 142 pp.

This most excellent book is written primarily for groups of college men, although extremely valuable to any thoughtful men and women. The whole theory of the author is that there is a correlation between knowledge and conduct; that in the long run intelligence and not ignorance about the great and fundamental issues of life will advance human behavior and success; and that college men are really seeking to find sane and fruitful interpretations of the life ahead of them.

The question and answer method is used in order that a certain greater concreteness and brevity than could obtain in a purely descriptive statement may be imparted to the topic under consideration. The entire book has been prepared with a view to synthesize the best contributions and highest knowledge from the fields of biology, psychology, sociology, medicine and hygiene, and of moral and religious philosophy. It is not, however, technical in style but rather presented in a remarkably plain and straight-forward diction which lends dignity and strength to the appeal which it can hardly fail to make to young men who are earnestly seeking for light and truth in the realm of high principle and moral living.

> ELEMENTARY HOME ECONOMICS, by Mary Lockwood Matthews, B. S., Professor of Home Economics and Head of the Department of Home Economics in Purdue University. Boston, Little, Brown and Company, 1921. 343 pp. Ill.

This volume is intended for use in classes beginning the study of foods and cookery and also of sewing and textiles. It has been arranged for use in the grades and presupposes little training in general science. Part I deals with the selection of clothing and garment-making, the garments being actually made from commercial patterns. The hygiene of clothing, attractive and suitable clothing, care and repair, and the clothing budget are phases of the instruction in garment-making. Part II deals with foods, their selection and preparation, and the planning of meals from the nutritive, æsthetic and economic standpoints. Through a series of "Home Problems" it is the expectation of the author that the home and school work will be helpfully correlated.

The book is intended for use in schools where one book is desired to cover the entire course in home economics, and is strictly an elementary treatment of the subject.

The American Journal of School Hygiene

Vol. V JUNE, 1921 No. 2

Published Quarterly, in March, June, September and December

Edited by Lawrence Augustus Averill

with the assistance of the following contributing editors:
Professor William H. Burnham, Clark University
Professor Fletcher B. Dresslar, George Peabody College for Teachers
Professor Lewis M. Terman, Leland Stanford Junior University
Dr. Louis W. Rapeer, President, National Research University, Washington, D. C.
Dr. C. Ward Crampton, Department of Education, New York City

RECONSTRUCTION IN CHILD WELFARE*

By Elizabeth McCracken

Children's Bureau, U. S. Department of Labor

Rural social work.—Work for the children needing special care has been neglected in rural parts of the country. Social conditions in rural communities are often as acute as in urban communities. The principles of child care as enumerated above are applicable to rural needs. Agencies for rural service should be encouraged, and should be adapted to the peculiar needs of rural communities. The county is usually the best administrative unit.

Scientific information.—There is urgent need of a more adequate body of scientific literature dealing with principles and practice in the children's field of social work, and the meeting of this need is the responsibility resting on those so engaged. Careful interpretation and analysis of methods and results of care and the publishing of these findings must precede the correcting of many present evils in practice. Boards of directors, trustees, trustees and managers should particularly consider participation in the preparation of such a body of facts and experience as being a vital part of the work of their staff members.

---

*Continued from the March number.

GENERAL MINIMUM STANDARDS

Economics and social standards.—At the general session of the Washington conference the economic and social aspects of child welfare standards were discussed. While detailed standards were not formulated in this wide field, it was recognized that an adequate wage for the father, wholesome and pleasant housing and living conditions, and the abolition of racial discrimination are fundamental to the realization of any child welfare program.

Recreation.—The desire for recreation and amusement is a normal expression of every child, which must be considered in any program for the physical and moral education of children. Parents and others charged with their care should be educated as to the importance of recreation. Public provision should be made for wholesome play and recreation, both indoor and outdoor, under trained leadership, and especially adapted to different age periods of the child.

Commercialized amusements should be safeguarded by official supervisors having a scientific knowledge of recreation.

Child welfare legislation.—The child welfare legislation of every State requires careful reconsideration as a whole at reasonable intervals in order that necessary supervision and coordination may be made and that new provisions may be incorporated in harmony with the best experience of the day. In States where children's laws have not had careful supervision as a whole within recent years, a child welfare committee or commission should be created for this purpose. Laws enacted for the several States should be in line with national ideals and uniform as far as desirable in view of diverse conditions in the several States.

Child welfare legislation should be framed by those who are thoroughly familiar with the conditions and needs of children and with administrative difficulties. It should be drafted by a competent lawyer, in such form as to accomplish the end desired by child welfare experts and at the same time be consistent with existing laws.

It should constantly be borne in mind that these standards are minimum and do not represent all that might well be done, but merely what cannot safely be left undone.

It will be noted that the standards provide for the care of the child, not merely from the day of birth but from the beginning of the mother's pregnancy; and that they relate to all the needs of the child except his need for moral guidance. It is scarcely possible and, moreover, it is not necessary to formulate general standards in regard to this matter, though it is of great importance as, and in the minds of many persons of greater importance than, the various other needs of the child. It is not possible to formulate general standards, for the reason that moral guidance must needs be individual; and it is unnecessary because each and every religious organization has recognized standards for its members, which, diverse in many ways, are alike in adequacy. It is, of course, a characteristic of all types of moral and religious standards that they are at one and the same time minimum and maximum,—that is to say, while they embody only what ought to be done, that particular thing is "perfection". In relation to children, all such standards agree in the following points:

(1) Competent religious training, according to the faith of the parents. This implies
  (a) regular attendance at such services of worship as may be provided by the religious body with which the parents are connected,
  (b) full use of the means of regular instruction furnished by the religious body.
(2) Religious and moral training from the parents in the home.
(3) The benefit of a good example on the part of the parents in matters of principle and conduct.

Having agreed upon standards for child welfare in all its phases, it is next needful to make careful plans by which they may be attained. Such plans differ according to the thing to be accomplished; but they should be alike in being practical and coordinative.

In order to put into effect the minimum standards for the protection of the health of mothers and children, perhaps no one thing is so much needed as Federal aid—particularly in rural districts—and no one person so essential as the public health nurse. The series of studies made by the Children's

Bureau of maternity and infant care in both urban and rural areas show that poverty and ignorance are the main reasons for the high infant and maternal mortality rates in the United States. More than 16,000 mothers die yearly in or by reason of childbirth; at least half these deaths are preventable. More than 200,000 infants under one year of age die yearly; practically all these deaths are preventable. The poverty, which is one of the two contributing factors, could be mainly overcome by Federal aid; very many fathers who can meet the ordinary expenses of the family have no margin of money with which to meet the extra expenses of maternity care or the care of sick children. A plan by which this additional money may be provided was proposed in the Sixth Annual Report of the Children's Bureau for the fiscal year ending June 30th, 1918. According to this plan, the United States Government would coöperate with the several states in providing a joint fund in each state to be used to provide adequately effective means for the protection of maternity and infancy. Such public provision, it need not to be said, should be universal; in short, it should be plain to every mother that the bearing and rearing of children is a service to the State, and that, therefore, without loss of personal independence and without hurt to her husband's self-respect, she may accept such aid as she needs from the state and the nation.

However, to eliminate the factor of poverty is not sufficient; ignorance must be overcome. Just as "poverty" is comparative, and in an overwhelming number of cases means simply that extra expense cannot be met, just so ignorance also occurs in varying degrees. The lack of knowledge on the part of otherwise educated persons in regard to maternity and infant care is striking. A physician recently said to the father and mother of a first child—both of them university graduates and from homes in which higher education had been axiomatic for three generations—"I have never seen more densely ignorant parents!" Maternity is exactly the same condition, and the chances of a mother's life and death are precisely identical, whether she can read one, two, or three, or no languages. And the needs of babies are alike; if those needs are not known they are not met, and the results are the same, whether the parents live in a large house or in one room.

There are several means by which this ignorance can be overcome; but the very best means is the nurse, and in most cases the public-health nurse. Some part of prenatal care and infant care, as well as care or supervision at confinement and post-natal care, must necessarily be given by physicians; but the needful instruction and a very large amount of additional care it is the office of the nurse to give. Some few mothers can have a private nurse; but these are very few indeed, partly because the expense is great and partly because the number of nurses is insufficient. Since a mother, neither during pregnancy nor the post-partum period, requires more than two or three hours' actual nursing care a day, to which needs to be added not more than three quarters of an hour for the care of the infant, it fortunately as well as naturally follows that one nurse, if she be a visiting nurse, can take care of at least six mothers and their babies.

In England, the work of the visiting nurse is supplemented by that of visiting household helpers. These "home helps", as they are called, come in to see that the older children, if there be any, go promptly to school; they do the necessary housework and cooking, if there be no one in the family to attend to this while the mother is incapacitated; and they otherwise give, not nursing care, but housekeeping assistance. Such helpers would be of great service in carrying out the program in the United States.

The minimum standards for children entering employment, it will be seen, require for their accomplishment a plan which included two elements: (1) enlightened public opinion and (2) adequate and thoroughly enforced laws. It has again and again been said that the best child labor law is a compulsory education law; and the standards suggest what should be a minimum provision and enforcement in this particular. In order to secure enlightened public opinion, not only the parents of children who seek employment but employers, also, require education. It may be that the great lesson of the war—that child life must not be wasted—contains within it the means to this education of the public. No figures are available as to the mortality or morbidity rates among working children, but the minimum health, educational, and, indeed, moral standards for children preclude child labor. Normal development, physical, mental, and moral, necessitates outdoor life, school attendance, and play, and a working child can have none of these.

The Federal Child Labor Act of 1916, which went into effect in September, 1917, was declared unconstitutional by the Supreme Court in June, 1918. In July, 1918, through the War Labor Policies Board, upon which were represented all the largest purchasing departments of the Government, it was voted that the standards of the former Federal Child Labor Law should be made a condition of all Government contracts. When the armistice was declared and Government contracts cancelled, it was necessary to make some other Federal provision for the protection of working children. In April, 1919, the provision of the Revenue Act of 1918, providing for a tax upon the products in the making of which children have been employed, became operative.

A study of the child labor laws of the several states shows great variety. Yet the needs of children and the requirements for their rearing do not differ in states or in nations. It would seem that, in the United States, Federal enactment should provide uniformity in this very important matter; and that public opinion should be definitely educated to that particular end.

Even in the average community, the child in need of special care, by reason of defectiveness, dependency, or delinquency, will be found. Such a statement as this is not uncommonly received with surprise,—the reason being that too many persons regard their particular community as the street in which they live, and that very often even that street is known to them only as regards a very few congenial neighbors.

Who has not heard a careful mother say to her child, "You must not play with "that" child; he is a bad boy; and then forget all about that "child"? The 'bad boy', if not helped, is very likely to come to the attention of the truant officer or the juvenile court. In the beginning he may be, and usually is, not delinquent at all but only in danger of becoming so; indeed, he needs "special care" a considerable time before the probation officer or the institution gives it to him. Real community spirit, genuine cooperation between the fathers and mothers of a neighborhood, is one of the best protections against delinquency in children and should be, as it were, an introduction to minimum standards for the treatment of juvenile delinquency.

In order to put into effect the standards relating to dependent children, the working plan must never lose sight of the necessity for the parental element. When dependent children cannot possibly be left in their own homes, they should be so placed that the new home actually is a home, and that the child receives not only scientific care but loving and interested care. Many parents have room not only in their homes but in their affections for another child; and many childless men and women have the parental feeling. Such persons, provided that they and their homes are otherwise fit, should be chosen in preference to others to care for children who must be taken from their own homes.

Children requiring very special care are those born out of wedlock. Within recent years, efforts to remove the handicaps which such children are made to suffer have been greatly augmented and strenghtened. It is now an accepted fact among thoughtful persons that children born out of wedlock should be cared for in every particular as are children born in lawful marriage. In order to bring this about, there must be, first of all, fuller education of the community in regard to what constitutes essential justice. It is an interesting fact that during the early centuries of the Christian religion a child born out of wedlock, upon being received into the Church, was thenceforth regarded, not only by the Church but the entire community, as equal with other children,—on the basis that God was his father and the Church his mother, in common with all other children so received. Moreover, the mother of such a child, giving evidences "of contrition and a hearty desire of amendment", was "absolved" and thereafter regarded by her neighbors, as well as the Church, as no longer a "sinner". The manner of treating the child born out of wedlock and his mother, lost or obscured during successive centuries, is now being sought, in spirit if not in form, by all socially minded persons. The results may be found in enactments and in proposed legislation for the care of children born out of wedlock, as well as in the attitude more and more often taken toward them and toward their parents,—namely, a constructive attitude.

Another group of children provision for whose care requires well-informed public opinion, adequate legislation, and gentle care are defective children, whether physically or mentally defective. Adequate facilities and persons not only highly trained but with genuine interest in making the very best of these facilities are necessary. Only through such a plan can the full degree of development possible to these children, who at best can develop only very partially, be secured. It is also of great importance that no confusion should exist in the minds of persons having to do with such children as to the fact that physical defect, even blindness, deafness and its occasional accompaniment, dumbness, is not and does not lead to mental defect. Physically handicapped children should not be further handicapped by the holding or the disseminating of this totally erroneous idea.

Plans for the utilization of standards for the moral welfare of children are provided by the several religious organizations; and highly trained persons whose first purpose in life is this particular work are in readiness to carry out these plans. What is acutely needed is the cooperation of parents. This will be secured in proportion as parents appreciate the fact that only through the full use of all the means to moral and spiritual education provided by the religious organizations of their respective faiths can their children receive the care they need in this matter. Moreover, it goes without saying that the parents must naturally believe and try to do what they are teaching and having their chidren taught to believe and try to do.

It has been said that the United States, since it was not broken by the world war, is not in need of reconstruction in the ordinary sense of the word. But can anyone doubt that, particularly in relation to child welfare, the United States needs reconstruction now,—and needed it for many years before the war? What the war has done in this respect has been to increase the vision of at least some portion of the American people and to concentrate their attention upon providing adequately for the welfare of children. Furthermore, there is a new sense of the immediacy as well as the importance of the problem: children are children for so short a time—and that time is so fraught with fleeting potentialities. What is to be done must not only be done well but done quickly. Authoritative standards, a coordinated plan, and the full use of the present moment are the essentials of child welfare and the minimum in a reconstruction program.

The American Journal of School Hygiene

Vol. V SEPTEMBER, 1921 No. 3

Published Quarterly, in March, June, September and December

Edited by Lawrence Augustus Averill

with the assistance of the following contributing editors:
Professor William H. Burnham, Clark University
Professor Fletcher B. Dresslar, George Peabody College for Teachers
Professor Lewis M. Terman, Leland Stanford Junior University
Dr. Louis W. Rapeer, President, National Research University, Washington, D. C.
Dr. C. Ward Crampton, Department of Education, New York City

AN IMPORTANT FACTOR IN OCULAR HYGIENE: GLARE

By Lawrence Augustus Averill,

Editor of The American Journal of School Hygiene.

To the layman the most striking evidence of the importance of glare as a factor in human vision is doubtless the alarming number of automobile accidents in which glaring headlights have been responsible for dazzling the eyes of the operative so that he was totally at a loss to distinguish objects in the path of his own machine. So widespread indeed has this evil become that practically every state in the union has taken positive steps to reduce the dangers from glaring headlights to a minimum. Whether, however, these dangers can be wholly eliminated by specially ribbed and focused lenses is extremely doubtful. Until the time comes when our highways are lighted from overhead units there will doubtless continue to be numerous accidents at night time.

There are, however, other aspects of glare of extreme importance both physiologically and hygienically, and these are of vital concern to everyone. Old and young alike, whether out-of-doors or in-doors, in the daytime or at night, are subjected to more or less glare. This paper will enumerate certain of the evils resulting from such exposure of the very sensitive ocular mechanism to light of too great intensity, and suggest certain hygienic precautions which all of us should take if we are to maintain the efficiency of vision at a reasonably high point.

How indefatigably active the pupillary muscles of an individual must be in the course of the day in order to protect properly the sensitive areas of the human eye we perhaps do not appreciate. Obviously there are large differences in the amount of light present during any one day as well as between very bright and very dark days, and the speed with which the eyes are able to adapt themselves to these sudden changes in the amount of illumination is truly astonishing. Cohn (2), for example, found in his photometric measurements on a single summer day the number of meter candles varying from 4, 519 to 76, 560, while on a single winter day he noted the enormous variation of from 579 meter candles to 9, 863.

Gstettner (5) reports observing in the lapse of a few seconds differences up to 250 meter candles on a desk in the middle of a schoolroom at noon. All this simply means that the human eyes, which are continually at the mercy of such sharp variations in luminosity must be protected by means of the pupillary mechanism against the entry of too much light. Let but so common an occurrence as a tiny cloud pass across the face of the sun, and the pupillary sphincters relax slightly to allow a greater amount of light to enter. Let now the sun suddenly break out through the cloud, and forthwith the reverse pupillary action must take place in order that too much light may be prevented from impinging upon the sensitive retina. In passing from a dark into a lighted room one experiences this phenomenon at its maximum. The quantity of light passing through the pupils is regulated almost instantaneously by the iris which initiates the contracting of the pupil in the bright light into which the eye is suddenly come. This, however, is a temporary reaction, for with the progress of adaptation in the retina the pupil again dilates. For some seconds after exposure to the brightness one is uncomfortably aware of the glare from it, the explanation of course being that the eye which the moment before was "dark adapted" is only slowly becoming "light adapted."

Kerr (8) ascribes to glare the chief importance among all ocular conditions, and considers it the chief ocular evil in the life of the school pupil. He points out that in order that the contrasts in the image may be sharp and clear, there must be rapid removal of the products of metabolism, and unless this is done after-images may result. Improperly focussed light falling on the retina as a haze may also mar the necessary contrasts. Malnutrition or interference with the retinal circulation causes after-images from the sluggish removal of the waste products in the retina. This glare from the persistence of after-images is one of the earliest signs of migraine. In toxic or exhausted conditions, muscae volitantes, the shadows of little cells and obscurities in the vitreous which are usually unnoticed, set up after-images which may become positively disagreeable. Another very common condition in which excessive glare is set up may be experienced when the rays of bright or even dull light are reflected upon the upper instead of the lower halves of the retina. In our upright position the upper halves of the retina are lighted habitually by the relatively dark images of the foreground, while the lower halves are accustomed to the brighter reflections from the sky. "The myriad sparkle of the summer sea, sunshine on the dusty road, or snow upon the mountains may thus become intolerable. The wanderer notices no glare until he lies down on his back, but even a gray sky may set up glare when its image falls on other than the usual lower half of the retina."

The same author states that the effect produced on the retina by every image should be a transient one, except that in cases of considerable brightness intrinsic in the sources of light, the image is likely to be of some duration. In rare cases of highly intense visual stimuli there may occur permanent organic changes, as, for example, sometimes happens in the case of amateur observers watching the sunspots or eclipses without taking proper pains to protect their eyes from the brightness of the luminous surface. These functional disturbances may last for hours, or even days, and occasionally result in scotoma. Still another common cause of glare is unfocussed light arising from shiny surfaces and reflecting images into the eye.

Ferree (3), after citing the fact that the problem of the earlier lighting engineers was to get the maximum output of light for a given expenditure of energy, rather than to discover the relationship of lighting systems to the economy of the eye, asserts that the real test of a lighting system should be how little loss of efficiency the eye suffers over a considerable period of unbroken work, plus the maximum of comfort. In order to investigate this factor in various lighting systems, Ferree, working with the American Medical Association, (1911), set about originating tests that would show reasonable constancy of visual efficiency under a favorable lighting system—or, in other words, to determine what lighting systems are best for the efficiency and comfort of the eye. While we are not concerned here with the tests actually evolved by Ferree, his findings are important. He mentions the following three aspects of lighting that sustain an important relation to eye-comfort and efficiency: (1) the distribution of surface brightness in the field of vision; (2) intensity; and (3) quality of the illumination. In the first of these, distribution, he finds proper illumination of a room by daylight to be the most satisfactory conditions from all points of view. Of the three systems of artificial lighting, the indirect illumination is best, being more approximately like daylight than any other. The loss of efficiency during a three-hour period of work was only slightly greater under this system for all observers than for a similar period by daylight for the same foot candles of illumination. The greatest loss of efficiency in the observers was suffered under the direct system of illumination, while the loss incurred under the semi-indirect was nearly as great. In general, there is slight difference in efficiency and eye comfort under the daylight and indirect methods, while both methods are far superior to the direct and the semi-indirect.

In the second aspect of lighting, intensity, Ferree finds that while a very wide range of intensity is permissible for daylight and the indirect type of system, for the semi-indirect system, the eye falls off heavily in efficiency for all intensities outside a narrow range on either side of 1.7 foot-candles, measured at the level of the eye at the point of work, with the receiving surface of the photometer in the horizontal plane. For the direct system, however, no intensity can be found for which the eye does not lose a very great deal in efficiency as the result of work. Compared with Ferree's findings, the intensity recommended by the Illuminating Engineering Society (Primer, 1912) for semi-indirect lighting ranges from 2-3 to 7-10 foot-candles, with 5-foot candles taken as the median of value. This is approximately three times the intensity of illumination recommended by Ferree. The explanation offered by Ferree is, and probably truly, that for a short period of work an intensity of 1.7 foot-candles does not give the maximum of vision. At an intensity, however, which does give maximum acuity for the momentary judgment, the eye runs down rapidly in efficiency over a considerable period of close application. The eye breaks down less rapidly under sustained effort when the intensity of the illumination is much lower than the standard recommended by the Society.

In the third aspect, quality, this author finds that, while more experimentation is needed, the work that has been done shows that clear white light affords a greater acuity of seeing than do lights of any of the colors projected through tinted globes.

Ferree's general conclusion is that if the light is well distributed in the field of vision, and if there are no extremes of surface brightness, the eye is practically independent of intensity—of course within reasonable limits. But for the kind of distribution effects we are getting from the large majority of our lighting systems, unquestionably too much light is being used for the welfare and comfort of the eye. If the source of light is to be in the field of vision at all, it should be as nearly as possible at the level of the eye, in order that the irritating effects commonly produced by the source of light falling on the upper or lower halves of the retina may be removed.

Luckiesh (9) points out, however, that the removal of the light sources from the field of vision is only half what must be done in order to safeguard the pupils' eyes from discomfort and injury. It is of equal importance that the surface polish of walls, blackboards desk-tops and paper be eliminated. Undoubtedly, the chief among these offenders is the glossy paper, so frequently still made use of by text-book makers, which acts as a mirror to reflect brightness from the lighting units directly or obliquely across the field of vision. At the Dundee meeting of the British Association for the Advancement of Science, in 1912, a paper for school books was recommended that should be absolutely without gloss. A white paper, or one slightly toned towards cream color, was proposed as the most satisfactory shade. Luckiesh mentions the fact that from glazed paper there is always an imperfect image of the lighting unit superimposed constantly upon the bright background, which is very disagreeable to the eyes. Beside this image of the units, the brightness of the paper itself, due to the diffusely reflected light, varies inversely as the square of the distance of the paper from the light source. Thus, while the amount of annoyance produced by paper held close to the light source is slight, it becomes tantalizing when the source and the paper are considerably removed from one another—a condition which necessarily obtains more or less in the schoolroom. Obviously, what makes it possible for words to be perceived sharply on paper is the degree of contrast between the black of the print and the white background; and any factor which tends to disturb this contrast is objectionable. "Assume that the ratio of brightness of the black characters—due to diffusely reflected light—to that of the white background is 4 to 100. This might be called the contrast ratio due to diffusely reflected light. If the paper and ink are somewhat glossy, they will also reflect light directly as a mirror does. Assume that each directly reflects the image of the light source with a degree of brightness that results in a contrast ratio, due to reflection alone, of 200 in the units of brightness as the first ratio. These brightnesses, due to regular and diffuse reflection, are, of course, superimposed with the resultant contrast ratio of 4+200 to 100+200, or 204 to 300." Here the contrast ratio has been reduced from 1 to 25 to approximately 2 to 3. Of course, as Luckiesh points out, it is conceivable that, due to the pressure of the type during printing, the contrast ratio may be actually reversed and the black characters become actually brighter than the paper. But the eye, being focussed for the printed matter, is bothered by the reflected image of the light source which spreads itself out over the retina, thus forming a veil which reduces the contrast. Under such conditions, the contrast may actually be reduced to zero. One can easily establish this principle to his own satisfaction by attempting to read in a sun-lit window from a book in which a highly polished or coated finish is used. It will be found that only after the book has been turned so that the page lies in a plane which is perpendicular to the line of vision can the words be read, and then with considerable strain and discomfort.

The same author refers to a committee appointed by the Illuminating Engineering Society for the purpose of studying glare from reflected surfaces. This committee is quoted as already having conferred with several publishers of school books and with many school officials in large cities—but with rather unsatisfactory results. But few of the school officials have reported, while the publishers, admitting the undesirableness of glazed papers, usually claim it is impossible to obtain an unglazed paper which will reproduce half-tones satisfactorily and still fulfill the requisites of cheapness and durability. More recently, however, with the growth of more refined printing processes, it has seemed that very excellent half-tone results may be had on paper that is entirely unglazed. What is needed, however, is a concerted demand on the part of all school authorities for such paper. With a few conspicuous exceptions, there has been little effort made to impress publishers with the importance of this matter, although there are at the present time in this country several large and well-known educational publishing houses which have appreciated the importance of this matter and have led the way in printing text books for schools on unglazed paper.

A. v Reuss (10) is in substantial agreement with Ferree in the evils of too strong light. In the case of protracted work under such conditions, he finds, hyperaesthesia of the retina may frequently follow. Snow-blindness, so-called, in consequence of looking for some time upon the dazzling snow, is an illustration with which persons in temperate zones are well familiar. Mountaineers and arctic explorers are especially liable to ocular injury, the excessive amount of ultra-violet rays burning the conjunctiva and in extreme cases the cornea. Posey (11) recommends for protection against snow and ice glare the common open spectacle frame fitted with large smoked or tinted glasses, and reports that all more or less hermetically fitting goggles for the exclusion of side light have been found by travelers to be superfluous and serve only to moisten the glasses. Motorists who have worn such goggles can bear witness to the truth of the latter statement. Glasses tinted yellow-green, according to this investigator, absorb the ultra-violets rays, and at the same time have but little coloring effect upon the landscape seen through them. There are also some cases on record of amateur sun-observers who, failing to equip themselves with proper lenses, have suffered either temporary or permanent blind areas in the retina which the glare from the sun has inflicted. In one such case, Dr. Paul Roemer, chief of the Greifswald University Eye Clinic, was actually able to see by means of the ophthalmoscope a persistent destruction in the region of macula lutea. Still other illustrations of injury to the ocular mechanisms by work in too strong light may be seen in eye-twitchings, epiphora, hyperaemia of conjunctiva and in the lid margins.

Alger (1)supports Ferree in charging that people very often insist on needlessly bright illumination of their homes and workrooms simply because they have accustomed themselves to it and have in consequence so blunted their retinal sensitivity that a reasonably bright light appears altogether inadequate for them. Both Alger and other investigators, however, hasten to point out that light that is actually too dim is just as harmful to eyes which must see in it as is light which is too strong.

In artificial lighting, sharp contrasts between either lighting units and their backgrounds or light and dark objectives should be reduced to the minimum. A gas-mantle, as Ives (7) points out, may be viewed against the bright sky in the daytime with no discomfort whatever, whereas the same mantle, seen against the darkness of night time may be all but unendurable. In this connection the effects of the motion-picture are specially deserving of note. Unquestionably the least strain is imposed upon the eye mechanism by attendance at the moving picture theatre in the evening. At such a time the sharp contrast between the bright out-of-doors and the dim theatre is absent, and the adjustment which the eyes are compelled to make upon entering the theatre is obviously much less in amount. In passing from the natural light of the street, however, into the semi-darkness of the theatre during the daylight hours, one is immediately aware of the extraordinary strain placed upon the eyes.

In order, therefore, to reduce to a minimum the amount of adjustment required of the eye muscles, it is important that the theatre, instead of being in almost complete darkness, save at the screen, be as light as possible without lessening too appreciably the sharpness of the shadows upon the screen. In the event of the room being too light, the eyes will be forced to use more energy in fixating the images on the screen before them. The indirect system of lighting is to be recommended for the general illumination of the house as interfering least with the satisfactory perception of the pictures. Considering the millions of pairs of eyes that are daily riveted upon the screen for a period of from two to four hours, it is particularly important that theatre managers should be compelled by law everywhere to maintain their equipment in the best possible condition in order that the eye mechanisms may suffer the minimum of fatigue in the ocular ordeal of the screen.

Ives (7) notes that good artificial lighting is not a question of the kind of illuminant, but rather of how the illuminant is used, the whole problem of artificial lighting beng, according to him, but a matter of the proper disposition of the light with respect first, to the objects to be lighted and, second, with respect to the people who are to see these objects. The most fundamental principle of good artificial lighting is that the light must shine on the object and not in the eyes of the observer. An unshielded light should then, according to this cardinal hygienic principle, never be visible. It must, however, be shielded in such a way that the maximum of its brightness shall fall upon the object of interest, whether that object be the printed page, or the sewing, or the lathe. Lamp-shades on electric reading lamps are often particularly disagreeable and fatiguing to the eyes because of the wavering shadows cast by ornamental fringes and tassels depending from the lower rim of the shade. Reading over a polished table top which throws back the glare of the lighting unit into the eyes is also a practice to be condemned, as is likewise that of reading with the lamp directly before one.

The same writer makes an excellent distinction between directed and diffused lighting, the former being thrown sharply and directly upon some local objective such as a type-setting case, sewing, etc., leaving the remainder of the room in sharply defined shadow; the latter being distributed evenly and softly over a non-localized area with attending absence of contrasting illuminated and shadowed spots. Diffusion is ordinarily obtained either through frosted or opal bulbs or globes or through redirection of the light rays upon a white surface, such as the wall or ceiling, which then becomes the light source.

CONCLUSIONS.

The following conclusions and recommendations concerning glare are important:

1. The phenomenon of glare is of extreme importance, both physiologically and hygienically and deserves to be better understood as of vital concern to the efficiency of the human eye.

2. A tremendous amount of muscular adjustment and readjustment is demanded of the eyes in order that ordinary changes in the brightness of illumination about one may not injure the sensitive areas of the retina.

3. Persistence of after-images, due to such physiological maladjustments as slow removal of metabolic products, malnu-

trition, interference with retinal circulation, etc., is a common cause of glare.

4. Visual stimuli of a high degree of intensity may be instrumental in permanently injuring or even blinding the eye not properly protected.
5. Unfocussed light is a common cause of glare; particularly is this true in schoolrooms.
6. The indirect method of illumination most closely approximates natural illumination in quality, and so is least apt to cause glare.
7. There is grave danger in many of our lighting systems that too much light is used for the best economy of vision.
8. All light sources should be removed from the field of vision or else properly shaded.
9. Surface polish of walls, blackboards, desk-tops, paper, etc., should be eliminated from every schoolroom.
10. In all forms of artificial lighting sharp contrasts between both lighting units and their backgrounds and between light and dark objectives should be so far as possible ruled out.

BIBLIOGRAPHY.

1. Alger, Ellice M. The relation of illumination to ocular hygiene. Transactions, Fourth Internatl. Cong. on Sch. Hyg. Vol. 5.
2. Cohn, H. Wie Tagesbeleuchtung in den Klassenzimmern prüfen? Allgem. Mediz. Central-Zeitung. 1901.
3. Ferree, C. E. The Efficiency of the eye under different systems of lighting. Transactions, Fourth Internatl. Cong. on Sch. Hyg. Vol. 5.
4. Furber, Wm. C. Daylight illumination of rooms and buildings from an architectural standpoint. In Posey's "Hygiene of the Eye." Chap. 8.
5. Gstettner, M. The lighting of schoolrooms, etc. Transactions, Fourth Internatl. Cong. on Sch. Hyg. Vol. 5.
6. Illuminating Engineers' Society. 1912 Primer.
7. Ives, Herbert E. Artificial lighting. In Posey's "Hygiene of the Eye." Chap. 7.
8. Kerr, James. Glare and the student's life. Am. Jour. Sch. Hyg. Vol. 2, 1918.
9. Luckiesh, M. Glare from paper. Transactions, Fourth Internatl. Cong. on Sch. Hyg. Vol. 5.
10. v Reuss, A. Beitrage zur Kenntnis des Jugendlichen Auges. Graefes Archiv. XXII—1.
11. Posey, Wm. C. Hygiene of the Eye. Phila., Lippincott, 1918. 344 pp. Ill.

ZINC IONISATION IN THE TREATMENT OF CHRONIC OTORRHOEA IN SCHOOL CHILDREN

By A. R. FRIEL, M. D., F.R.C.S.I.*

In acute suppuration of the middle ear the discharge shows an infection by a single species of micro-organism such as pneumococcus. If care is taken to absorb the discharge the tissues develop sufficient power in a few days to repel the micro-organism and the patient recovers. If, however, the discharge is allowed to lie in the meatus it frequently becomes infected by micro-organisms from the skin or air. This decomposing discharge—not necessarily fœtid—irritates the tissues with which it is in contact, which in their turn respond by throwing out more leucocytes and more fluid. It is this infection of the discharge which causes acute otorrhœa to become chronic. The task is then to sterilise an albuminous fluid outside, but in contact with living tissues without irritating the latter.

Experience shows that if the accumulated discharge is regularly removed by mechanical means and measures adopted to keep the ear dry we often succeed in bringing about a cessation of this discharge. To carry out this method of treatment effectively in the large number of cases of otorrhœa occuring among school children is found an impossibility. Any other method of treatment, therefore, to sterilise readily the infected area without causing irritation and which can be easily applied is worth study.

Zinc ionisation consists in introducing into exudations or tissues particles of zinc by means of the electric current. The particles are the electrically-charged atoms known as "ions," because under the influence of the electric current they can be

---

*Abstracted from the English *School Hygiene*, Vol. 12, No. 3. August, 1921.

made to travel in a definite direction, permeating and penetrating the exudation, or tissues, with which they are in contact. Zinc ions have the property of coagulating albumen, and as bacteria (as well as blood and tissue-cells) are composed largely of albumen, these are coagulated and killed. The exudation is rendered sterile and the irritation of the tissues and otorrhœa ceases. In cases suitable for this procedure sterilisation occurs with one application, so that often within twenty-four hours an ear which has been discharging for weeks, months or years is free from discharge or inflammation.

Sepsis is the basic factor. When it is confined to the tympanum and is the *sole* factor ionisation alone is sufficient treatment. If small granulations are present, or if there is much swelling of the mucous membrane, or inflammation of the external auditory meatus, boracic powder should be blown into the meatus immediately after ionisation to absorb any fluid which exudes before the granulations have disappeared, or all swelling and inflammation have subsided.

After an ear has been carefully cleansed it is washed out with a weak solution of zinc sulphate. The child lies down on a couch and the positive electrode is inserted in the ear, the negative one being applied to the arm or leg over a towel wrung out of salt solution. A current of 2 or 3 milliampères is used for ten minutes.

The records kept of each case show age, duration of discharge, cause of chronicity, treatment and result.

From an analysis of these records it appears that more than half of the cases of otorrhœa in school children can be *readily* cured by ionisation.

Of 49 cases which were cured at the London County Council's clinic for this treatment, 27 paid two visits to the clinic and 11 three, while 11 paid more than three visits.

Of 38 cases ionised from one centre 26 were known to be cured, 3 did not return, 5 ceased to attend, 2 were referred for operation, and 2 were still under treatment.

As to permanency of result, zinc ionisation is an antiseptic procedure, not a method for producing immunity, which last results from disease or inoculation. Possibly the tissues in the ear have been inoculated to a considerable extent by the products of the germs which have been so long in contact with them. Experience shows that when a patient has recovered from otorrhœa by ionisation a recurrence is uncommon.

The American Journal of School Hygiene

Vol. V DECEMBER, 1921 No. 4

Published Quarterly, in March, June, September and December

Edited by Lawrence Augustus Averill

with the assistance of the following contributing editors:
Professor William H. Burnham, Clark University
Professor Fletcher B. Dresslar, George Peabody College for Teachers
Professor Lewis M. Terman, Leland Stanford Junior University
Dr. Louis W. Rapeer, President, National Research University, Washington, D. C
Dr. C. Ward Crampton, Department of Education, New York City

THE HEALTH TOWN

Contributed by the
National Tuberculosis Association

In the fall of 1916 a fund of $100,000 was made available for the National Tuberculosis Association by the Metropolitan Life Insurance Company of New York for the purpose of carrying on in a typical small American city a demonstration of what could be done and should be done by each community in the prevention and care of tuberculosis. The idea back of the demonstration was to put into practice every known method of attack on the Great White Plague.

Framingham, Mass., because it was an ordinary, average town with an average type of population, and an average death rate from tuberculosis and other causes, was chosen as the seat of the demonstration.

In every community there are certain forces which can be utilized to build up the community's health. The first great force is of course, each citizen of the community. Every individual each day is doing something either to build up or tear down his health and the community health. The first step therefore, was to interest every one of these potential health builders in the movement. That they became interested is shown by th fact that over 12,000 out of a population of 17,000 in Framingham presented themselves voluntarily for complete physical examinations or were examined in the schools and factories so that a true picture of the town's health was secured. Doctors, medical societies, the board of health, the nurses in hospitals and the visiting nurses, and welfare organizations then put their shoulders to the wheel to help rid the town of tuberculosis.

Much has already been accomplished although the demonstration is not yet complete. It has cost money to be sure, but in a summing up the cost of the demonstration to date, it is shown that the total would be possible for any community that valued its health enough to pay for it. Every community pays for its streets and its schools and its fire department, because it values these essentials of a good town. But no town pays as much for its health as the benefits of health would warrant. What Framingham did, and is still doing, could be done year in and year out for an average expenditure of about two dollars a year per capita.

Why should not a town spend as much for the prevention of sickness as it does for the prevention of property loss by fire? Considering the importance of physical development as a source of joy and comfort and profit and power, it is hard to imagine why communities do not see the importance of spending at least an equal amount for these blessings as they do for fire prevention, public school education, etc.

If it did no more than reduce the annual death rate the $35,000 spent in one year in Framingham would be worth the outlay. For example, the death rate last year among infants was 62 per thousand instead of 81 the year before. The death rate among the whole population dropped from 14 per thousand where it had been for the previous ten years, to 11 per thousand. In a town of 17,000 inhabitants this means a saving of 51 lives. It has been estimated that the loss from each person who dies before his time is $10,000 in the case of tuberculosis. This means at the lowest estimate a prevention of several hundred thousand dollars of economic loss, besides the unnecessary grief and suffering. The tuberculosis death rate in Framingham was 121 per 100,000 population prior to 1917. In 1920 it was 64 per 100,000. There was a drop of 20% the first year and 30% the second year.

During the first three years of work over 250 cases of tuberculosis were brought under advice or treatment. Many of these were arrested by treatment and the patients are now at work. Realizing the importance of all associated forms of ill health, arrangements were made for correcting any and all defects found. A school dental clinic was established. Children as well as adults having nose and throat trouble were earnestly advised to have these attended to. A summer camp for young children was established. School luncheons were arranged for in one of the schools. Modern Health Crusade Clubs were formed among the children. Factory health conditions were improved by providing expert health consultation service for workers, compulsory annual physical examination, improvements in the working conditions. Local milk conditions were investigated and improved. Domestic science and food economy were started, for it is an unfortunate fact that very few housewives have any conception of the tremendous importance of the right kind of food in the right quantities, properly cooked, not only for themselves but also for their husbands and children. Two infant welfare nurses were provided to help the mothers to carry the babies over that most dangerous age of all from the point of susceptibility to tuberculosis, up to three years of age.

The physicians themselves, stimulated by the increased interest of the public, held a post-graduate medical lecture course with experts in various lines to give the addresses. They also arranged for experts in tuberculosis to cooperate with them in early diagnosis and cure of tuberculosis.

In addition to all these measures, many educational pamphlets were issued to adults, especially mothers, on the various phases of disease prevention and it is safe to say that no town in the United States now knows more about its health than does Framingham, the Health Town.

The Framingham Health and Tuberculosis Demonstration shows what can be done with moderate expenditure and proper organization of community resources. It is for the purpose of promoting similar efforts on the part of other communities that the appeal is being made for funds by the National Tuberculosis Association through the sale of Tuberculosis Christmas Seals which will be conducted in December.

THE IMPORTANCE OF VITAMINES IN THE DIET

BY LAWRENCE A. AVERILL,
Editor of The American Journal of School Hygiene.

It has until recently been supposed that provided one ate certain common foods in the proper amounts, health, in so far at least as diet is concerned, would take care of itself. Such common foods were assumed to be protein, carbohydrates and fats, with a seasoning of iron and calcium and phosphorus. Somewhat recently, however, the results of certain careful experiments upon animal nutrition have tended to upset our theories, at least partially, by suggesting the necessity of three additional food materials in the diet which previously had not been heard of by the laity and had only partially been understood by the scientist.

Experimenting in 1881 upon the diet of mice, Lunen discovered that while mice could live for an almost indefinite period upon a diet of milk they succumbed very quickly (i. e., within a month's time) when fed a diet of what is commonly believed to be the essential ingredients of milk: casein, fat, milk sugar and ash. From these experiments he concluded that there must be in milk certain indispensable elements besides those commonly known.

Following the pioneer work of Lunen, Hopkins, an English scientist, Osborn and Mendel, of Yale, and McCollum and Davis of Johns Hopkins, have succeeded in establishing the existence of three accessory food elements in certain substances, and to them the name *vitamines* has been given. Thus far, it is true, no one has succeeded in actually isolating any of these three elements, nor in analysing very actually their chemical or physical properties. Experiments in the diet of animals, however, have seemed to demonstrate beyond a doubt the presence of all three of them in certain food products. As to how great quantities of them are requisite to the diet of human beings, and how great quantities are contained in food stuffs, nobody yet knows. About the only positive information we have, in addition to the knowledge that they exist, is that a complete lack of these elements in the diet may and does lead to actual disease, and that too great deficiency in them may be responsible for ill health and retarded growth in the young.

The names which the investigators have given to these three mysterious food elements are: (1) fat soluble A; (2) water soluble B; and (3) anti-scorbutic C. Following is a brief description of each of these three substances.

FAT SOLUBLE A.

This vitamine owes its name to the fact of its solubility in fat. It is found chiefly in solution in animal fats, butter, cream, egg yolk, beef fat, fish oils, etc., but does not occur to any appreciable extent in vegetable oils. In addition to these, Fat Soluble A is found commonly in two other sources: glandular organs (liver, kidneys, pancreas) and leaves of vegetables (asparagus, Brussels sprouts, cabbage, lettuce, celery). It is believed that Fat Soluble A is of prime importance in the promotion of normal growth in young people, and that it acts as a preventive against rickets, on the one hand, and xerophthalmia, (a vicious disease of the external coating of the eye) on the other.

The history of the diets prescribed for tuberculosis sufferers throws an interesting light upon the importance of Fat Soluble A. It has long been known that a generous dietary reacts favorably upon the tuberculous patient, and now comes the significant revelation that those very foodstuffs most universally regarded as essential in the feeding of consumptives are particularly rich in Fat Soluble A. Among such foods may be mentioned cream, milk, butter, eggs, cod liver oil, etc.

Dietitians are now recommending that at least one of the foods containing Fat Soluble A (and preferably two of them) should appear daily in the diet of growing children if they are to grow normally and maintain their health in prime condition. It is likewise essential that adults, in the interest of strength and resistance power, should see to it that such foods find a prominent and constant place in their menu. Of particular importance is it that pregnant and nursing mothers should have a liberal supply of Fat Soluble A in their diet. In this connection it is pointed out that bottle-fed babies are not the only ones who are subject to attack from rickets. Breast-fed infants may, if the mother's milk is deficient in Fat Soluble A, fall easily prey to this disease, since obviously their only source of supply of this very essential element is the milk of the mother. Not only is the infant whose diet lacks the proper amount of the soluble incurring the risk of becoming ricketty, but in addition it is suffering deprivation of a substance which seems to be indispensable to normal growth at a period when the growth impulse can ill brook any interference.

WATER SOLUBLE B.

As its name would indicate, the second of the three important vitamines may be dissolved in water, and is often referred to as Water Soluble B. With the exception of white floor, white rice, sugars, starches and fats, and possibly a few other foods, this soluble is found in some quantities in all natural foodstuffs. Hence there is little danger of any diet being deficient in it. The chief sources of Water Soluble B are the seeds of plants, eggs and highly cellular organs, such for example as liver. Flesh contains comparatively little. Yeast cells are a rich source of this element, hence the modern popularization of the eating of yeast as a cure-all. In the legumens (peas and beans) the soluble is distributed tolerably evenly throughout the seed, whereas in cereals it is concentrated in the germ and outer layer. Consequently the milling process removes the greater part of Water Soluble B, which remains in the bran. For this reason bran is believed to be a very beneficial adjunct to the dietary.

Since Water Soluble B is dissolvable in water, it tends to cook out of vegetables which are boiled, and if the water is thrown away this vitamine is obviously lost. Whenever possible, therefore, such water ought to be made use of in soups or gravies. Vegetables baked or steamed, rather than boiled, preserve the soluble intact so that its value as a vitamine is not lost. Water Soluble B appears an essential in the diet as a promoter of growth in the young and as a preventive against antineuritic conditions, also beri-beri.

ANTI-SCORBUTIC C.

The third vitamine has been named Anti-Scorbutic C, in recognition of its virtue as a preventive and cure for scurvy. Like Water Soluble B, it is soluble in water. Among the most common sources from which we derive this vitamine are fresh vegetables and fruits. Foods that are richest in this element include lettuce, cabbage, turnips, tomatoes, raspberries, oranges and lemons. Potatoes, while relatively poor in content of Anti-Scorbutic C, probably are the chief preventive against scurvy in the northern countries where other vegetables are rare by reason of the fact that they comprise a very large part of the diet. Dried vegetables, it is interesting to note, are deficient in Anti-Scorbutic C, as are all canned vegetables and canned meats. Canned fruits and tomatoes, on the other hand, because of their acidity increase the stability of the vitamine and its destruction is consequently in a measure prevented, although it exists in less quantity than in the fresh fruit.

In environments where fresh vegetables or fruits are not available, Anti-Scorbutic C may be supplied in sufficient quantities for the dietary by means of moistening the available seeds, such as wheat, barley, rye, peas, beans and lentils, and allowing them to sprout. Sprouts on vegetables thus treated are relatively rich in content of Anti-Scorbutic C and may be cooked (the shorter time, the better) and served in the ordinary way.

All bottle-fed infants require an extra Anti-Scorbutic, since cow's milk, even when raw, is poor in this element, and when heated or Pasteurized or otherwise preserved the vitamine is still further reduced. The best anti-scorbutic food to use for this purpose is orange juice, although tomato juice and grape juice are excellent. In the case of breast-fed babies, it is important that the diet of the mother contain an adequate supply of fresh fruits and vegetables.

IMPORTANCE OF VITAMINES IN THE DIET.

It is now pretty generally admitted that failure to include these vitamines in large quantities in the diet not only may result in retarded growth and development and a lessened resistance to disease in childhood, but may actually be responsible for lowered resistance power in adults and even lead to such specific diseases as rickets, scurvy, xerophthalmia and beri-beri. The effect upon the nervous system of a dietary deficient in these important elements may be profound, and it has been demonstrated by scientists that a diet otherwise adequate will, if deficient in vitamines, lead in many cases to abnormal development of the bony tissue, particularly of the teeth. Absence of vitamines may be a cause of prolonged retention of the temporary teeth, delayed eruption of the permanent set, irregularity in alignment, defective enamel, decalcification, and even loosening of the teeth.

Important as are the vitamines in the adult dietary, they are even more so in the diet of the growing child, if development is to be regular and growth normal. It would be an extremely interesting thing if we could know approximately what percentage of the malnutrition, rickets and other disorders of growth and development in children of school age is traceable to deficiencies in vitamines. The indications are that the percentage would be a high one.

The recent research into the nature and value of the vitamines has served to complicate still further the already complex problems of health and disease. Taken together with modern discoveries of the action of the glands of internal secretion and their relationship to normal functioning of the organism, this newest discovery serves to emphasize anew the age-long problems connected with the efficiency of the human machine, and to suggest that after all many of the secrets of health and disease have not yet been ferreted out.

(Adapted from an article entitled "Vitamines or Accessory Food Factors", by Mrs. Alzira Wentworth Sandwall, of the Massachusetts State Department of Health, in *The Commonwealth,* Vol. 8, No. 3.—Ed.)

The American Journal of School Hygiene

LAWRENCE AUGUSTUS AVERILL, Editor
Worcester, Massachusetts

CONTENTS OF VOLUME V

1921

Page
Child Welfare, Reconstruction in 1, 17
Glare: An Important Factor in Ocular Hygiene 25
Health Town, The 37
Otorrhoea, Zinc Ionisation in the Treatment of Chronic 35
Vitamines, The Importance of in the Diet 40

AUTHOR'S INDEX

Averill, Lawrence A. 25, 40
Friel, A. R. 35
McCracken, Elizabeth 1, 17
National Tuberculosis Association 37

[illegible]

32101 063850885